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CCCCXXXII.—FORESTRY IN NATAL.

A translation of a paper from the *Forst und Jagd Zeitung* by Sir Dietrich Brandis, K.C.I.E., F.R.S., formerly Inspector-General of the Indian Forest Department, is contributed to *Nature* for January 3rd, by Mr. W. R. Fisher, B.A., Assistant Professor of Forestry at the Indian Civil Engineering College at Cooper's Hill.

It gives a very complete account of the position of forestry in this part of South Africa. The Colony appears to have made a good start in the direction of ascertaining the deficiency in its resources in regard to timber, and also to have established nurseries with the object of planting up waste lands in the neighbourhood of its principal towns. After a very brief period of activity it has suddenly abandoned the enterprise. The officer in charge has relinquished his post, and the plants in the State nurseries were to be sold.

Forestry in Natal.

Natal lies between latitude 28° and 31° S. The climate of the coast is almost tropical, owing to a warm current from the equator. Mangrove trees grow along the coast, and sugar cane and tropical Indian fruit trees are cultivated there. The land ascends rapidly inland, and the capital, Pietermaritzburg—or Maritzburg, as it is usually called, at 50 miles from the coast—is at 2275 feet above sea-level, and possesses an appreciably mild climate.

The Colony is bordered on the west by the Kathlamba or Drakensberg, a mountain chain attaining altitudes which exceed 9600 feet, and separating Natal from the Transvaal, the Orange Free State, and Basuto-land. These mountains form the eastern boundary of the high South African plateau, which is drained by the Orange River and its tributaries.

Natal is scantily populated, containing 18,755 square miles, with 532,000 inhabitants, of whom 38,000 only are Europeans. Most of the latter are English who came by sea and founded Port Durban, but a few are descended from the Dutch Boers who came from the west in 1838–42 and founded Maritzburg. Natal has been an English colony since 1843, when the territory only included 3000 native inhabitants,

but their numbers rose rapidly to 100,000 in 1845, and to 400,000 in 1883. They are mostly Zulus in the north, and Kaffirs in the south of the Colony.

Much greater progress could have been made in Natal, in trade, agriculture, and manufactures if it had been connected by roads and railways with the Transvaal and Orange States. The Cape railway, 650 miles long, from Cape Town to Kimberley, with express trains doing the distance in 36 hours, has long been constructed, and in 1893 this railway was extended to the Transvaal gold mines at Johannesberg.

In 1880 a railway was constructed from Durban to Maritzburg, but only recently has it been pushed further inland, and it now reaches the confines of the Colony. Its further extension to Johannesberg is most important for the future prosperity of Natal. About one and a half years ago a railway was made from Ladysmith in Natal to Harrismith in the Orange State. Natal is at present short of funds, and this may partly explain why, having made a good start in forest conservancy, the Colonial Government has not had the resolution to persevere in it.

The Cape Colony has had for some time a good forest administration which was organised by a French forest officer, Count Vasselot de Regné, Conservator of Forests in Algiers, and Mr. D. E. Hutchins is now Chief Conservator of Forests at Cape Town. He was trained at Nancy for the Indian forest service, and left it for service at the Cape in 1883. Mr. Fourcade, of the Cape forest service, was employed in Natal for nine months in 1889, and has written a very valuable paper on the Natal forests, but he declined to quit the Cape service permanently for that of Natal, and was succeeded in 1891 as chief forest officer there by Mr. Schöpflin, a Baden forest officer.

The work he undertook of organising a forest department in Natal was full of difficulty, especially as the forest revenues were not expected to cover the expenditure for a number of years. Irrespectively of the continual clearance of forests for the extension of agriculture, forest fires, unregulated grazing, and wasteful timber felling have so exhausted the Natal forests that the areas still covered with brushwood and forest are widely scattered over the country, and only a small per-centage of them is still State property.

From the coast to altitudes of about 975 feet, with an average annual temperature of 67°–71°, the forest consists of numerous species belonging to the tropical flora. The woods are not more than 30–60 feet high, but something might be made of them, as several species yield valuable timber. Unfortunately nearly all the coast forests are now private property.

In a central zone ranging in altitude between 980 and 3450 feet, with an average annual temperature of 59°–67° F., extensive tracts are covered with so-called mimosa scrub, formed of several species of *Acacia;* these woods are very thinly stocked, and contain a tall grass undergrowth. The acacias bear plenty of seed, and young growth exists, but is continually being destroyed by the annual grass fires. If only protection could be afforded to these forests against fire, as has been done for the last 30 years in British India, they could be worked profitably with short rotations—24 years, according to Mr. Fourcade; it is, however, probable that most of this area will be cleared for agriculture.

The present area of the coast and acacia forests is estimated at 196,000 acres of State forest, and 1,645,000 acres in private hands.

In the higher zone, from 3450 feet up to 9600 feet, with a temperate climate, and an average annual temperature of 52°–59°, the most

valuable forests are situated, but they are scattered over a difficult mountainous region. Of these forests, the State possesses 54,000 acres, and 27,000 acres are in a territory assigned to the indigenous inhabitants of the country. The Government has decided that in the mountains the action of the Forest Department will be restricted to the State forests. They contain many species; *Podocarpus Thunbergii* and *P. elongata*, both known as yellow-wood, are the commonest, and their wood resembles that of the European spruce. At present the great cost of transport prevents the profitable working of yellow-wood. Amongst the remaining species, the two most valuable trees are stinkwood (*Ocotea bullata*), so named on account of the bad odour of freshly-sawn wood, an evergreen lauraceous species with a beautiful brown heart-wood, which is hard and tough; and sneeze-wood, *Pteroxylon utile*, an ally of the horse-chestnut. These woods are also highly esteemed in the Cape Colony, especially for cart and waggon making, and can be worked at a profit even from these remote mountain forests. Unfortunately these two species are only found here and there in the forests, and there is no large supply of them.

In the year 1891–92, the sale of wood by the Natal Forest Department yielded 725*l.*, while the expenditure was 1,942*l.*, partly for establishment and partly for the survey of the forests. Owing to the small area of forests available, and the remote position of the State forests, Mr. Fourcade strongly recommended that plantations should be started near the towns and railways. Past experience with the blue gum (*Eucalyptus Globulus*) is favourable for the success of this tree in Natal. At Arambi, near Ootacamund in the Nilgiri Hills in India, this tree attains a height of 107 feet in 19 years, and yields 8696 cubic feet per acre. This enormous production of 457 cubic feet per acre annually was attained in latitude 11° N. at an altitude of 7426 feet above sea-level.

In the higher latitude of Natal, a similar climate to that of Arambi is found at 2275 feet above sea-level, and, according to Mr. Fourcade, mixtures of *Eucalyptus Globulus*, *longifolia*, and *rostrata* give an even higher yield near Maritzburg than at Arambi. Mr. Schöpflin doubts whether this will be the case; but, at any rate, the gum-trees will give a large yield, and if the wood were only fit for fuel a considerable pecuniary return would be obtained. Several of the gum-trees, however, yield splendid timber, and especially *E. rostrata*, the red gum of Southern Australia.

Timber imports into Natal average in value 180,000*l.* a year, so that, as the indigenous forests are small, much sub-divided, and unfavourably situated, the State is clearly called upon to plant up a sufficient area of the State lands. Mr. Fourcade states that the land necessary for these plantations can now be purchased cheaply, and Mr. Schöpflin commenced planting operations. This useful measure is now abandoned, owing to want of funds, and the plants in the State nurseries will be sold.

Besides *Eucalypti*, several Australian acacias succeed admirably in Natal, especially *A. decurrens* and *mollissima*; their bark is rich in tannin, and a plantation of 1,200–1,500 acres of these trees has been started by a private company. Near the neighbouring Transvaal goldfields, Australian trees are being planted on a large scale to supply mine-props.

The length of rails in Natal is about 625 miles, and the mountain forests will yield a portion of the necessary railway sleepers. Yellow-wood must be kyanised, as has been done in the Cape Colony, and kyanising works can easily be established in Natal, and wood from

gum-tree plantations ought to supply the balance of the sleepers required.

It is evident that Natal cannot possibly prosper without a Forest Department, and the Colony will have cause to regret having abandoned the attempt to form one, after such an excellent beginning has been made. The Government wished to retain Mr. Schöpflin's services up to March 31, 1894, but would not undertake to employ him after that date. Under these circumstances, he was obliged to resign his appointment last September, in order to return to the Baden forest service.

The following note was prepared for publication in a Kew Report some years ago. The state of things described is not likely to have improved, or to have made some measure of forest conservation less necessary :—

The forests are distinguished as of two kinds, light timber and heavy timber. The former consists of "thorn" or Mimosa, and yields wood principally used for fuel, and to some extent for waggon-making, &c. It occupies "a belt of land about 30 miles in width, extending along, but about eight miles distant from the coast-line." The heavy timber is mostly found on the mountain slopes, in the interior of the Colony.

According to the Colonial Timber Returns in 1878 the area of forest land was largely diminishing. There was formerly a considerable export of sawn timber to the Orange River Free State and the Transvaal. This had almost entirely ceased, and a large amount of timber for building purposes was imported into the Colony.

A Commission was appointed by the Natal Government to inquire generally into the conditions of the forests and woodlands of the Colony. This reported in 1880.

The general drift of the evidence printed by the Commission points to a progressive destruction of the forest. Thus, "Mr. James Ralfe says :—'I consider that one-third of the wood has been destroyed since I first (25 years ago) knew this part of the Colony.'" (p. 11.)

"For many years after the settlement of the Colony the portion of forest lands belonging to the city of Pietermaritzburg yielded timber fit for buildings, waggons, &c. About 20 years ago the supply dwindled down to only firewood, which the citizens had the right to remove, upon payment of 1*s.* 6*d.* per waggon-load of probably two tons weight.

"There being no attempt at conservation of any kind, a very few years sufficed for the entire destruction of the forest growth; and although nearly 20 years have passed away since under severe prohibitory regulations, the situations occupied by the heavy timber have been protected, scarcely any signs are present of the spontaneous return of the noble trees which the intelligence of the municipality had not seen fit to protect." (p. 13.)

"The evidence laid before the Commission respecting the condition of forests on private lands, points generally to the same reckless waste as in the forests on the Crown lands. Both the European owners and their native servants and tenants appear to have almost entirely disregarded all precautionary measures for the preservation of the timber and its economical application in the supply of Colonial necessities. Nor has it occurred to any of the numerous owners of forest lands to plant out either indigenous trees, or trees of any kind, on the patches of land that have in course of many years been denuded. The owners of forest lands, desirous of in every way possible encouraging their native servants to reside on their lands, have avoided the imposition of restric-

tions that would be antagonistic to their customs as regards freed and domestic work. They enjoyed the run of the forest for planting purposes, more especially as the crops in the forest clearings were more or less safe from the trespass, during the night, of the landlord's cattle."

"The natives everywhere are viewed as the natural antagonists of the forests. In the construction of each of their ordinary huts from 500 to 1000 saplings are required. In the palisading of their kraals for their cattle, the proportion is even greater than that required for their huts." (p. 8.)

The natives "creep slowly, it may be, but withal most effectually, into the forests, destroying trees that may each contain timber to the value of 50*l*., and be the growth of over two hundred years. This destruction is effected simply by the native women removing the bark from a very short section of each tree, as near the ground as may be convenient, and shortly thereafter, with a brushwood fire it is felled, crushing many a beautiful and promising sapling in its descent." (p. 9.)

In Newcastle county "fuel is abundant from the coal deposits." (p. 19.)

The evidence as to any permanent deterioration of the climate is conflicting. The general belief is that there has been a decrease in the rainfall. Rivers have become dry for lengthened periods, which however does not imply necessarily a diminished rainfall. The Commission recommended that the services of a forest officer should be secured; but the Government did not seem disposed to take any immediate action.

CCCCXXXIII.—NEW ORCHIDS. DECADE 12.

111 **Cryptophoranthus minutus**, *Rolfe;* planta minuta, caule abbreviato v. subnullo, foliis orbicularibus apiculatis basi in petiolum brevem attenuatis, floribus breviter pedicellatis, bracteis ovatis apiculatis, sepalis puberulis in tubum oblongum connatis lateribus fenestratis, petalis spathulatis, labello cordato-hastato obtuso minutissime denticulato bicarinato, columna clavata apice alata.

Hab.—Not known.

Folia 5 lin. longa, 2½ lin. lata. *Pedunculi* 3 lin. longi. *Bracteæ* 1 lin. longæ. *Sepala* 2½ lin. longa; fenestræ 1 lin. longæ. *Petala* 1 lin. longa. *Labellum* 1¼ lin. longum. *Columna* 1¼ lin. longa.

A minute species, which flowered with Mr. J. O'Brien in November 1891. It is far smaller than any other yet known in the genus, being little over half an inch high, and the flowers very large for the size of the plant. Their colour is deep maroon-purple. It seems most allied to *C. punctatus*, Rodr. (Gen. et Sp. Orch. Nov., II., p. 80), of which the dimensions are not given, but the colour of the flowers is very different.

112. **Cryptophoranthus oblongifolius**, *Rolfe;* caulibus teretibus foliis brevioribus vaginis infundibuliformi-tubulosis striatis apice obliquis acutis, foliis elliptico-oblongis subobtusis viridibus, pedunculis brevibus erectis, bracteis tubulosis apice obliquis acutis, floribus pendulis, ovario 9-angulato angulis subalatis, sepalo postico lanceolato-oblongo acuto leviter carinato lateralibus alato-carinatis, petalis quadrato-oblongis apice retusis apiculatis v. subtridentatis trinerviis, labello

breviter unguiculato sagittato-cordato acuto v. apiculato, ungue medio tuberculum carnosum erectum ferente, columna clavata.

Hab.—Andes of South America.

Caules 1½–2 poll. longi. *Folia* 1¾–3 poll. longa, ¾–1 poll. lata. *Pedunculi* ¾ poll. longi. *Bracteæ* 3 lin. longæ. *Sepala* 10-12 lin. longa, 3½ lin. lata; fenestræ 3 lin. longæ. *Petala* 2 lin. longa. *Labellum* 2¼ lin. longum. *Columna* 1½ lin. longa.

A wild specimen of this species was presented to Kew in August 1889, by Mr. J. Charlesworth, of Heaton, Bradford, who had collected it in some part of the Andes of South America, not precisely indicated. In November 1894, a specimen was sent from Glasnevin, by Mr. F. W. Moore, A.L.S., for determination, which apparently belongs to the same species, though the leaves and flowers are a little smaller, the nerves of the petals rather stronger, and the tubercle at the base of the lip rather less developed. In other respects it agrees well with the dried specimen. It is allied to the West Indian *C. atropurpureus*, Rolfe, but the flowers are structurally different, and veined with maroon-purple on a dull yellow ground.

113. **Microstylis macrochila**, *Rolfe;* foliis petiolatis oblongo-ovatis acutis undulatis, scapis erectis glabris multifloris, bracteis oblongo-lanceolatis acutis reflexis, sepalo postico oblongo-lineari subobtuso lateralibus falcato-oblongis obtusis ad medium connatis, petalis linearibus obtusis, labello orbiculari basi profunde cordato apice fimbriato-dentato, columna brevissima bidentata.

Hab.—Malaya.

Folia 3–4½ poll. longa, 1¾–2¼ poll. lata. *Scapus* 6–8 poll. longus. *Bracteæ* 2–4 lin. longæ. *Pedicelli* 5–6 lin. longi. *Sepalum* posticum 6 lin. longum, 1 lin. latum; lateralia 4 lin. longa, 1½ lin. lata. *Petala* 6 lin. longa. *Labellum* 6 lin. longum. *Columna* ½ lin. longa.

This handsome *Microstylis*, the largest-flowered species yet known, flowered in the collection of Sir Trevor Lawrence in May 1894. The leaves are almost identical with those of *M. Scottii*, Hook. fil. (Bot. Mag., t. 7268), for which it was purchased, and no difference was detected until it flowered. The flowers, however, are many times larger than in that species, and very different in colour. The sepals and petals are light yellowish green, the lateral sepals being a little suffused with dull purple at the tip, and the large lip deep red-purple. The leaves are light yellowish brown with an irregular marginal band of lighter colour. It presumably grows with *M. Scottii*, of which a large number of plants were imported about a year ago, though there is some doubt about the precise locality. It is believed, however, to have come from Pulau Aar, a small island just off the east coast of Johore. It is remarkably distinct.

114. **Dendrobium inflatum**, *Rolfe;* caulibus gracilibus teretibus subflexuosis, foliis oblongis obtusis v. minute bidentatis, racemis terminalibus paucifloris, bracteis oblongo-lanceolatis acutis, sepalo postico ovato-oblongo obtuso, lateralibus triangulo-ovatis basi cum pede columnæ in mentum amplum inflatum obtusum extensis, petalis oblongis obtusis, labello obovato-spathulato obtuso crenulato undulato ecalloso, columna brevissima.

Hab.—Java.

Pseudobulbi 5–6 poll. longi. *Folia* 9 lin. longa, 2½ lin. lata. *Racemi* 6 lin. longi. *Bracteæ* 2 lin. longæ. *Pedicelli* 9–10 lin. longi. *Sepalum* posticum 5 lin. longum, 2½ lin. latum; lateralia 10 lin. longa, 4 lin. lata. *Petala* 5 lin. longa, 1½ lin. lata. *Labellum* 10 lin. longum, 6 lin. latum. *Columna* 2 lin. longa. *Mentum* 7 lin. longum.

A distinct and pretty little species which was introduced by Messrs. Linden, L'Horticulture Internationale, Brussels, and flowered in their establishment in June 1894. It belongs to the section *Pedilonum*, and is allied to *D. auroroseum*, Rchb. f., which, however, is a larger plant altogether, with acute leaves and large differently coloured flowers. *D. inflatum* has relatively large white flowers, with a yellow line down the centre of the column-foot, a yellow blotch near the apex of the lip, and a faint rose-purple stain on the unguis.

115. **Bulbophyllum disciflorum**, *Rolfe;* pseudobulbis late ovoideis monophyllis, foliis lanceolato-oblongis acutis crasso-carnosis canaliculatis basi attenuatis, scapis brevibus uni-paucifloris, floribus magnis, sepalis subcarnosis basi connatis oblongo-ovatis acutis lateralibus ad medium connatis, petalis basi sepalorum adnatis erectis linearibus acutis, labello oblongo obtuso planiusculo verruculoso basi late canaliculato lobis lateralibus parvis erectis apice subobtuso, columna subtereti apiculata dentibus obsoletis mento subhemisphærico obtusissimo.

Hab.—Laos, Siam.

Pseudobulbi ¾ poll. longi. *Folia* 4–5 poll. longa, 12–13 lin. lata. *Sepala* 1 poll. longa, 6–7 lin. lata. *Petala* 4 lin. longa, ¾ lin. lata. *Labellum* 9 lin. longum, 4 lin. latum. *Columna* 4 lin. longa. *Mentum* 5 lin. longum.

A remarkable species introduced by Messrs. Linden, L'Horticulture Internationale, Brussels, and flowered in their establishment in October last. It is peculiar in having the base of the sepals united into a flat disc, to which the petals are adnate at the base. Thus the petals appear to arise from a broad disc, above which they stand quite parallel to each other and about two lines distant from the column on either side. The name is given in allusion to this character. The sepals are densely covered with small red-brown dots on a light greenish yellow ground; the petals semipellucid white with a red-brown mid-nerve, and some similar marginal dots, and the lip almost wholly covered with minute purple-brown warts which nearly obliterate the paler ground colour; column light yellow with a green apiculate anther.

116. **Cirrhopetalum whiteanum**, *Rolfe;* rhizomate repenti valido, pseudobulbis oblongis tetragonis monophyllis foliis elliptico-oblongis obtusis rigide coriaceis, scapis erectis vaginis laxis tectis apice nutantibus multifloris, floribus capitato-congestis, bracteis lineari lanceolatis acutis concavis, sepalo postico ovato acuto ciliato lateralibus longe caudato-attenuatis glabris, petalis oblongis subobtusis ciliatis trinerviis, labello recurvo oblongo acuto, columna brevissima dentibus brevibus.

Hab.—Moluccas (?)

Pseudobulbi 4–6 lin. longi. *Folia* ¾–1¼ poll. longa, 5–7 lin. lata. *Scapi* 3 poll. alti. *Bracteæ* 4–6 lin. longæ. *Pedicelli* 1½ lin. longi. *Sepalum* posticum 3 lin. longum, lateralia 1½ poll. longa. *Petala* 1 lin. longa. *Labellum* 1 lin. longum.

A small species allied to *Cirrhopetalum vaginatum*, Lindl., but with pseudobulbs and leaves scarcely half as large as in that species, and the

pseudobulbs much closer together on the rhizome. It was received from Mr. J. O'Brien, with the information that it was found "growing "on roots of *Vanda stangeana*, said to have come from the Moluccas." There seems to be a little doubt about the habitat. *Vanda stangeana*, Rchb. f., was described from a garden plant said to have been imported from Assam, but little or nothing is known about it beyond the original description. The flowers of *C. whiteanum* are light straw-yellow with a bright yellow lip.

117. **Megaclinium imschootianum**, *Rolfe;* pseudobulbis acute trigonis oblongis monophyllis, foliis lineari-oblongis obtusis, scapis foliis longioribus, rachi compressa lineari-oblonga crenulata inæquilateraali, bracteis lanceolatis acutis reflexis, sepalo postico lanceolato-oblongo apice acuminatissimo recurvo, lateralibus late ovatis apice acuminatissimis reflexis, petalis falcato-lanceolatis breviter acuminatis, labello recurvo carnoso lineari-oblongo obtuso infra medium margine serrulato, columna brevi latissime alato dentibus brevibus et latis.

Hab.—Not known, but probably tropical Africa.

Pseudobulbi 1¾ poll. longi, 8 poll. lati. *Folia* 6 poll. longa, 1¼ poll. lata. *Scapi* 10 poll. longi; rachis 6 lin. lata. *Bracteæ* 3 lin. longæ. *Pedicelli* 1½ poll. longi. *Sepalum* posticum 5 lin. longum, 1 lin. latum; lateralia 4 lin. longa, 2½ lin. lata. *Petala* 1¾ lin. longa. *Labellum* 2 lin. longum.

This was received from M. A. Van Imschoot, of Mont-St.-Amand, Gand, in July last. It is allied to *Megaclinium oxypterum*, Lindl., in which the flowers are much more crowded, and situated in the centre of the rachis, while in the present one they are in a line much nearer to the lower margin; besides being different in structure. The rachis is light green, with numerous minute black dots near the margin. The flowers are light yellowish green, with the reflexed tips and margins of the sepals dusky brown and a few similar spots near the apex, the petals spotted and marbled with the same colour, the lip minutely spotted all over, and the wings of the column less distinctly spotted with dusky brown.

118. **Maxillaria sanguinea**, *Rolfe;* caulescens, rhizomate valido vaginis imbricatis tectis, pseudobulbis ellipsoideo-oblongis subcompressis, foliis elongato-linearibus angustis subacutis, floribus breviter pedunculatis, bracteis ovatis apiculatis, sepalis oblongis subobtusis, petalis lineari-oblongis subobtusis, labello subintegro oblongo obtuso callo lineari nitido, columna clavata.

Hab.—Chiriqui, Central America.

Pseudobulbi ½–1 poll. longi. *Folia* 10–15 poll. longa, 2 lin. lata. *Pedunculi* ¾–1 poll. longi. *Bracteæ* 3 lin. longæ. *Sepala* 6–8 lin. longa, 2–2½ lin. lata. *Labellum* 6–7 lin. longum, 3 lin. latum. *Columna* 6 lin. longa.

A distinct and very pretty species belonging to the group *Caulescentes*, and allied to *M. tenuifolia*, Lindl. It was sent from the neighbourhood of the Chiriqui Lagoon, to Mr. J. O'Brien, with whom it flowered in April 1890. Plants were distributed to Kew, Glasnevin, and one or two private collections, where they have since flowered. The sepals are dull reddish brown with yellow tips, the petals pale yellow spotted and marbled with red-brown, and the lip carmine or purple-crimson, with a blackish purple crest.

119. **Oncidium panduratum**, *Rolfe*; pseudobulbis oblongis subcompressis, foliis lineari-oblongis subobtusis, scapis suberectis ramosis ramis brevibus multifloris, bracteis ovato-oblongis subacutis, sepalis petalisque oblongis subacutis crispo-undulatis, labello pandurato lobis lateralibus parvis suberectis rotundato-oblongis crenulatis intermedio reniformi-ovato apiculato crenulato isthmo quadrato-oblongo nitido, callo oblongo depresso obscure tricarinato verrucoso, columna brevi aptera.

Hab.—Columbia; *Millican*.

Pseudobulbi 4 poll. longi, 2 poll. lati. *Folia* 10–12 poll. longa, 1½–1¾ poll. lata. *Scapi* 1½–2 ped. longi. *Bracteæ* 3–4 lin. longæ. *Pedicelli* 8–9 lin. longi. *Sepala* 7–8 lin. longa, 2½ lin. lata. *Petala* 7–8 lin. longa, 3 lin. lata. *Labellum* 4½ lin. longum, 3 lin. latum; isthmus 1¾ lin. latus. *Columna* 1½ lin. longa.

A very distinct species, belonging to the section *Hymenoptera obsoleta*, recalling *O. anthocrene*, Rchb. f., but with smaller and more numerous flowers, and further differing from every other species of the group in the shape of the lip. It was collected by Mr. Albert Millican and sent home with Odontoglossums in 1891. A plant flowered in the collection of Welbore S. Ellis, Esq., Hazelbourne, Dorking, in October last. The flowers are deep reddish brown, the sepals being margined with yellow on their upper parts, and the small lobes of the lip also yellow, while the larger isthmus is bright shining brown. The crest consists of three dwarf fleshy parallel keels, which are slightly verrucose.

120. **Sarcanthus auriculatus**, *Rolfe*; foliis lineari-oblongis inæqualiter bilobis, racemis gracilibus arcuatis multifloris, bracteis minutis triangulo-ovatis acutis, sepalis ellipticis obtusis patentibus, petalis incurvis concavis paullo minoribus cæteris similibus, labello trilobo lobis lateralibus auriculatis valde concavis minute crenulatis angulis internis in dentem erectam productis intermedio recurvo triangulari-oblongo obtuso, disco lævi, calcare oblongo obtuso, columna brevissima.

Hab.—Not known.

Folia 2½–6½ poll. longa, 6–10 lin. lata. *Racemi* ½–1 ped. longi. *Bracteæ* ½ lin. longæ. *Pedicelli* 3 lin. longi. *Sepala* 2½ lin. longa, 1¾–2 lin. lata. *Petala* 2 lin. longa, 1½–1¾ lin. lata. *Labelli limbus* 2 lin. longus, 2 lin. latus; *calcar* 2 lin. longum. *Columna* 1¼ lin. longa.

This was sent to Kew by Mr. J. O'Brien in June 1890, and on two other occasions It has the general habit of *S. Parishii*, Rchb. f., but it is quite different in the structure of the flower; and there does not appear to be any described species having the same remarkable auriculate side lobes. The flowers are very pale green or greenish white, with a purple line on each of the sepals and petals, and some purple marblings on the lip.

CCCCXXXIV.—AGRICULTURE IN BRITISH HONDURAS.

In continuation of previous information on this subject (*Kew Bulletin*, 1894, p. 97), the following extract is taken from the Annual Report for 1893 (*Colonial Reports*, Annual, No. 116, 1894) on the

agricultural resources of British Honduras. It is noticed by the Governor that a valuable impetus has been given to the cultivation of fruit for export by the organisation of a new steamship company by local capitalists. Already, owing to this cause, increased applications have been made for the purchase or lease of Crown lands, and better facilities are afforded for the disposal of agricultural produce :—

The principal products of the Colony, in addition to mahogany and logwood, are sugar, rum, Indian corn, bananas, cocoanuts, and plantains, and, according to the returns supplied, the quantity produced during 1893, and in the case of bananas, cocoanuts, and plantains, the quantity exported for the same period, are as follows: sugar, 1,490,920 lbs.; rum, 57,178 galls.; Indian corn or maize, 47,607 bushels; bananas, 189,420 bunches; cocoanuts, 1,177,315; plantains, 506,400 fruits. The returns for sugar, rum, and Indian corn cannot, however, be considered as strictly accurate, and probably are very much below the actual quantity produced.

Under bananas, cocoanuts, and plantains only the quantity exported has been given, as no reliable figures could be obtained as to the quantity grown. In endeavouring, therefore, to arrive at an approximate estimate of the bunches of bananas and the number of cocoanuts and plantains annually produced in the Colony, a reasonable allowance must be made for home consumption by a population of nearly 33,000 souls. There is a very considerable decrease in the quantity of bananas, cocoanuts, and plantains exported in 1893 as compared with the four previous years, but this decrease is almost entirely attributable to the disastrous effects of the gale of the 6th of July, which wrecked or very seriously damaged nearly all the plantations in the southern districts of Stann Creek and Toledo. Considering the geographical position of British Honduras, the fertility of its soil, and the general salubrity of its climate, it is surprising that the number of its agricultural products as articles of commerce is not greater than it is. By the establishment, through the efforts of his Excellency Sir Alfred Moloney, K.C.M.G., in 1892, of a Botanic Station at Belize attached to the grounds of Government House, an attempt has been made to create a nursery for the cultivation of plants of economic value of all kinds. But the condition of the soil in Belize and the proximity of the station to the sea have proved the present site to be not altogether suited for its purpose, and it is hoped to shortly transfer the Botanic Station to the Stann Creek district, where a site of some 75 acres, admirably adapted for its purpose, has been generously placed at the disposal of the Government by the board of directors of the British Honduras Syndicate. Even at Belize the Botanic Station has proved of value, for, from the experiments made there, and from experience gained of the resources and capabilities of the Colony, it seems clear that the following products, in addition to those which have already proved successful, can be grown with advantage and with profit to agriculturists : cacao, castor-oil plant, coffee (*liberica* for the lowlands, *arabica* for the highlands), rubber (*Castilloa elastica*), *Cola acuminata*, cotton, grape-fruit, ground nut, henequen, jute, lemon, lime, nutmeg, pine-apple, pimento, sapodilla, shaddock, tobacco, and vanilla. In addition to the above, the following kitchen-garden products, as they are generally termed, can be readily cultivated: artichoke (Jerusalem), asparagus, beans of various kinds, cabbage, carrot, cauliflower, celery, corn, cucumber, edible gourds, Indian kale, lettuce, melon, mint, ochro, parsley, potato (Irish and sweet), peas, spinach, and tomatos.

Bearing in view the short-sighted policy of depending on logwood and mahogany as the staples for the Colony's trade, it is to be hoped that the oft-repeated exhortation of his Excellency the Governor that the future of British Honduras must depend on its agricultural development will be borne in mind, and that in time this Colony will become, what it is eminently fitted by its climate and fertility to be, the garden of Central America.

CCCCXXXV.—GOLD COAST BOTANIC STATION.

The progress made in establishing a Botanic Station at Aburi on the Gold Coast has been noticed in the *Kew Bulletin*. The site is in the hills, at an elevation of about 1400 feet, overlooking the sea-board, near Accra and Pram Pram. In addition to its suitability for the growth of economic plants Aburi is a valuable sanatarium for European invalids. The locality has been greatly improved of late years, and it promises to become the centre of activity for many cultural industries started by the Botanic Station. The progressive development of the station is described in the *Kew Bulletin*, 1891, p. 169; 1892, pp. 14 and 297; 1893, pp. 160 and 365. During the winter of 1893–94 Mr. William Crowther, the curator (appointed in 1890), was deputed to visit the West Indies "to observe the system pursued there in the cultivation of "economic plants, and to bring back such useful seeds and plants as "might with advantage be introduced to the Gold Coast." Mr. Crowther very successfully carried out the object of his mission and published a detailed report (*Kew Bulletin*, 1894, p. 227). Since then the work of the Aburi Station has made excellent progress. The inception, as well as the actual work, so far accomplished in botanical enterprise at the Gold Coast is entirely due to the Governor, his Excellency Sir William Brandford Griffith, K.C.M.G. He has given warm and consistent support to the station and personally encouraged in every way the efforts of the curator.

The most recent information is contained in the following correspondence. In this an account is given of a recent visit made to the station by Mr. A. M. Ashmore, an officer of the Ceylon Civil Service, lately Acting-Colonial Secretary at the Gold Coast :—

COLONIAL OFFICE to ROYAL GARDENS, KEW.

SIR, Downing Street, 14th December 1894.

I AM directed by the Marquess of Ripon to transmit to you, for your perusal and for any observations you may have to offer, a despatch from the Governor of the Gold Coast Colony, with its enclosure, respecting the Botanical Station at Aburi.

I am, &c.

The Director, (Signed) JOHN BRAMSTON.
Royal Gardens, Kew.

GOVERNOR OF THE GOLD COAST to COLONIAL OFFICE.

Government House, Cape Coast Castle,

MY LORD, 20th November 1894.

BEING desirous of having the Botanical Station at Aburi inspected by an officer of experience, towards the end of last month

I requested Mr. Ashmore, the Acting-Colonial Secretary, who has seen a good dead of the cultivation of coffee in Ceylon, to undertake this duty, and I have now the honour to forward, for your Lordship's information, a copy of his interesting report upon the Aburi plantation, and would suggest that Mr. Thiselton-Dyer, C.M.G., should be allowed to peruse Mr. Ashmore's paper, as I think it would interest him to see what the former states with regard to an undertaking in which the Director of the Royal Gardens at Kew has always taken a strong and kindly interest, and the advancement of which he has done so much to promote.

* * * * * *

3. The coffee pulper recommended by Mr. Ashmore has been sent for.

I have, &c.

(Signed) W. Brandford Griffith,
Governor.

The Most Honourable
The Marquess of Ripon, K.G.,
&c. &c.

(Enclosure.)

Report by the Acting-Colonial Secretary on his Inspection of the Botanical Station at Aburi.

Started from Accra for Aburi, Sunday, 28th instant, at 7.45 a.m. Arrived at Aburi, after walking up from the foot of the hill, between 4 and 5 p.m.

The road up to Teimang from Christiansborg requires remaking throughout. From Teimang up the pass to Aburi it is well traced, and on the whole in good order. The portion through the village of Aburi is in very bad order and in great want of repair.

The village of Aburi is larger than I had expected. It is full of goats and sheep, and is like a coast, not like a bush, village, in that it is constructed without any attempt at arrangement, although there are three streets in it.

Mr. Kemp's house, which I passed and visited on my way up, is admirably situated on a fairly level open space, looking from the brow of the hill over the great plain towards Pram Pram. It seems to be well constructed and simply arranged. Walls built of stone, good stone-built go-downs outside. Two very large rooms, I presume a school-room downstairs and a dormitory upstairs. Found very pleasant quarters at Government House, Aburi.

29th instant.—In the morning went round the grounds with Mr. Crowther. They are very well kept and clean. Besides English vegetables and the flower garden there are—

i. a considerable area of Liberian coffee;
ii. a small area of Arabian coffee;
iii. a litttle cacao of about a year old under plantain trees for shade;
iv. a considerable area, some acres, of quite young cacao under the same shade;
v. some considerable extent under native products such as sweet potatos and cassava; and
vi. a number of scattered fruit trees, a little india-rubber, some annatto, &c.

By far the largest area is the Liberian coffee, and it is a very healthy and promising cultivation. It is in several patches of different ages,

from a year to nearly three years old. It all looks well, and the older trees are bearing crop. It is planted 12 × 12.

The Arabian coffee is planted 8 × 8, and has been allowed to grow up to 6 feet high. I think this is a mistake. All cultivated Arabian coffee previously seen by me has been topped at about the height of a man's waist, and I believe that it is understood to be the best height. It looks healthy, and is bearing crop, not much of which is, however, now left to gather.

The crop which is gathered is successfully cleaned by the most primitive method I have ever seen. It is scraped with a round stone in the hollow of a larger stone by hand, and then washed and dried in the sun. It is obvious that it would be impossible to deal with any considerable amount in this way, but there is not much Arabian coffee, and so it is made to answer. When, however, the Liberian coffee comes to be plucked, the crop is due in about three months, it will be necessary to adopt some kind of machinery, and as there is no water power here, and as it is not desired to provide expensive machinery, I spoke to Mr. Crowther about a hand pulper. He showed me a book of advertisements of coffee machinery, and proposed to buy a hand coffee pulper for Liberian coffee at the cost of 47*l*. In conversation we subsequently agreed that a smaller one, costing, I think, 27*l*., would be large enough. When brought out it ought to be housed; it will require, of course, only a small building, and this should be placed on the side of the great tank furthest from the house, in order that the required small stream of water may run down to it and not have to be carried by hand. A cement-washing tank for the coffee of small size should lie below the machine, and beyond or to the side of that a small cemented barbecue or drying ground.

I think this purchase should be at once sanctioned and the machine got out if possible in time for the coming crop. The construction of the shed and barbecue must await its arrival, as we cannot tell its exact size. Even though the present area of Liberian coffee is not nearly in full bearing, it is obviously impossible to deal with the crop of 10 acres with a couple of stones. I have accordingly asked Mr. Crowther to prepare a requisition for the pulper so that it may be forwarded at once, and a vote may be taken for it at the next meeting of Council.

While on the subject of coffee, I may state that the Arabian coffee so-called (it is no doubt the descendant of the Jamaica coffee imported by the Basel Mission) is the smallest I have ever seen. This is probably because the elevation is too low for it, being more suitable to the Liberian variety. It is perhaps also attributable to no attention having been spent on the selection of seed, and the original importation having been 40 years ago. The largest berries should always be selected for seed. Mr. Crowther is trying a variety of coffee from Sierra Leone, which he tells me grows very well at sea-level there, and fetches a good price. I think it would be well to get fresh seed of the Arabian variety from Jamaica.

Again I thought, as I did on Mr. Batty's plantation near Jukwa when visiting it early this month, that the cacao is the most promising of the cultivations. Every tree looked extraordinarily healthy, there is, of course, but little of the bearing age and even that still very young. The plantain clumps planted for shade no doubt give a very dense, perhaps too dense, shade, but it is generally accepted that the plantain is a very exhausting crop and it is obvious that in the case of cacao, which requires rich soil, it is inexpedient to grow merely for shade an

exhausting tree, the fruit of which is practically valueless. I was therefore glad to see that Mr. Crowther is engaged in propagating another shade tree, the one usually used for the purpose, with which to replace his plantains.

The other cultivations in progress are not yet of considerable importance. The rubber looks promising, and the great difficulty of dealing with rubber, that of extracting the rubber in sufficient quantities to pay for the trouble without damaging the tree, is not yet a question for solution. Mr. Crowther has a good show of oranges, some of them excellent, and several varieties including that from Canary, of bananas, but none of them, not even the last named, satisfies a person who has tasted the many excellent kinds of oranges and bananas which are common in the East. There is practically no other fruit at all.

Two or three matters I think might have attention ; in the first place, the first opportunity should be taken of an officer who can survey being in Aburi to get a plan of the garden in detail. It is highly important to know the produce per acre of the different coffees, and it will be important when it has progressed a little more to know the same of the cacao.

In the second place, something more might be done for the flower garden. Roses are very easily got out by parcel post, and the only rose tree here is very flourishing. A selection of begonias and other things suitable for a tropical hill garden, might be asked for from Kew. Many kinds of cacti would flower in Aburi profusely. Anything that would come out cheap in the form of bulbs would help to make a show.

I think too, arrangements could be made for introducing new varieties of fruit. The success, for instance, of the introduced Avocado Pear has been wonderful ; there must be many other such introductions possible ; new varieties of pine-apples, the Durian of the Straits, and some good mangoes. The African mango is one of the most loathsome of the fruits of the earth. There is plenty of space at Aburi and no object in extending any of the experimental cultivations now in hand further than to show that they can be made economically successful.

A. M. A.

The opinion expressed in the above report on shade plants for cacao may possibly be misunderstood by cultivators in West Africa. It may be mentioned that plantains and bananas are universally used as temporary shade plants for cacao. At present there is nothing better, if not too closely placed. The fruit of both is capable of being utilised ; as much, indeed, as if they were planted for the fruit alone. For permanent shade the case is different. A fairly lofty and deep-rooted tree is then necessary, such as species of *Erythrina* used in Trinidad and Central America, the Sand-box tree (*Hura crepitans*) and the Saman (*Calliandra Saman*).

In regard to the small-beaned Arabian coffee found in West Africa, this is remarkable as growing at low elevations, almost at sea-level. A small sample received at Kew from the Botanic Station at Lagos was valued in November last at 94*s*. per cwt. The most generally cultivated coffee plant for low elevations is undoubtedly the Liberian coffee.

CCCCXXXVI.—DECADES KEWENSES.

PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM.

DECAS XII.

111. **Ceanothus leucodermis**, *E. L. Greene* [Rhamnaceæ]; fruticosus vel arborescens, ramis rectis crassiusculis rigidis ramulisque divaricatis brevibus spinescentibus floriferis glabris albo-glaucis, foliis paucis parvis brevissime petiolatis coriaceis ovalibus obtusiusculis serratis vel serrato-dentatis supra glabratis subtus præcipue in nervis pubescentibus, thyrsis subsessilibus numerosis elongatis angustis subcylindraceis, floribus cœruleis.

Habitat.—California: doubtless of the Coast Range, but special locality unknown. Collected many years since, by *Lobb.*

Folia 4–8 lin. longa, medio 3–5 lin. lata. *Thyrsi* 1½–2½, poll. longi, diametro ½ poll. nudi vix interrupti.

There are specimens from Douglas and Coulter referred to *C. divaricatus*, which are perhaps varieties of the species here proposed; but these are more leafy, the leaves thrice as large, more elongated in outline and with margins nearly entire; their flower-clusters shorter and thicker. All are easily distinguishable from Nuttall's *C. divaricatus* by their glabrous and white-glaucous branches and branchlets, and by their subsessile and leafless inflorescence. The true *C. divaricatus*, less divaricate than these in its branching, and therefore not well named, is still a rare shrub in the herbaria. Its branches and twigs are slender, somewhat pubescent, and entirely devoid of bloom or any kind of white indument; its flower-clusters are on distinct leafy peduncles. It really does not belong to what is known in California as the spinescent and rigidly divaricate group of the genus. On the contrary, its affinities are quite with *C. integerrimus*. It should here be explained that the specimens of Douglas to which I here refer are those from which Hooker and Arnott drew the description of *C. divaricatus* for the botany of Beechey's voyage; and from this point everybody seems to have been led as to the identity of Nuttall's species; so that at present about 19 out of 20 of the herbarium specimens extant under the name *C. divaricatus* represent this very different white-barked group, of which *C. incanus*, *C. cordulatus*, and *C. leucodermis* are representative. The sheet of specimens typical of *C. leucodermis* appears to be unique, and was communicated to the Kew Herbarium by Mr. Veitch.

112. **Staphylea holocarpa**, *Hemsl.* [Sapindaceæ]; frutex vel arbor parva 10–12-pedalis (*A. Henry*), glabra vel cito glabrescens, foliis longe petiolatis 3-foliolatis, foliolis subcoriaceis lateralibus subsessilibus terminali longe petiolulato omnibus oblongo-lanceolatis abrupte breviterque acuminatis basi obtusis subtus pallidioribus obscure calloso-serrulatis reticulato-venosis, venis primariis lateralibus utrinque circiter 10, floribus ignotis, capsula pyriformi atque triangulari abrupte acuminata, seminibus subellipsoideis griseis nitidis.

Habitat.—China: Nanto and mountains to the northward, province of Hupeh, *A. Henry*, 3017 and 4536.

Folia cum petiolo usque ad 6-poll. longa, petiolo communi 2–3-pollicari; foliola 2–3 poll. longa, 1–1½ poll. lata. *Pedunculi* 2–3 poll. longi. *Capsulæ* 1½–2 poll. longæ.

113. **Pyrus** (§ **Malus**) **Prattii**, *Hemsl.* [Rosaceæ]; novellis appresse albo-pilosis cito glabrescentibus, ramulis fructiferis crassiusculis, foliis longe petiolatis chartaceis ovato-lanceolatis ovatis vel interdum fere ellipticis acute acuminatis basi sæpissime rotundatis interdum obliquis minute creberrimeque subduplicato-calloso-serrulatis citissime glabrescentibus, venis primariis lateralibus utrinque circiter 10, venis ultimis minute reticulatis, floribus mediocribus subcorymbosis, corymbis multifloris terminalibus subsessilibus, pedicellis gracilibus, calycis lobis crassis præcipue intus albo-sericeis acuminatis, petalis brevissime unguiculatis subcordiformibus apice late rotundatis conspicue venosis, filamentis deorsum leviter incrassatis parcissime puberulis, stylis 5 glabris, fructu parvo ovoideo punctato segmentis calycinis intus lanatis coronato.

Habitat.—China: chiefly near Tachienlu, at 9000–13,500, province of Szechuen, *A. E. Pratt*, 93 and 824.

Folia absque petiolo 3–4 poll. longa; petioli $\frac{3}{4}$–1 poll. longi. *Pedicelli* circiter pollicares. *Calycis lobi* sesquilineares. *Petala* 4 lin. longa. *Fructus* 5–6 lin. longus.

114. **Ophiocaulon Rowlandi**, *Baker* [Cucurbitaceæ]; sarmentosus, glaber, cirrhis elongatis simplicibus, petiolo apice glandula magna unica prædito, foliis simplicibus membranaceis cordato-orbicularibus leviter palmato-lobatis, cymis multifloris ad cirrhorum reductorum latera productis, calycis tubo brevi campanulato lobis oblongis maculis copiosis atro-brunneis decoratis, petalis calyci æquilongis, antheris linearibus magnis, filamentis brevissimis.

Habitat.—Interior of Western Lagos, near Abbeokuta, *Dr. Rowland.*

Folia 1½–2 poll. longa et lata. *Pedicelli* 5–6 lin. longi. *Flores* masculi 3–4 lin. longi.; fœminei ignoti.

Nearly allied to the widely spread Tropical African *O. cissampeloides*, Hook. fil.

115. **Othonna disticha**, *N. E. Brown* [Compositæ-Senecionideæ]; caulibus vel ramis simplicibus apice racemoso- vel corymboso-floriferis glabris anguste bialatis dense foliatis, foliis distichis erectis vel suberectis imbricatis ellipticis vel elliptico-oblongis obtusissimis sessilibus basi in alas cuneatim decurrentibus glabris subcarnosis?, pedunculis fere usque ad involucrum foliiferis monocephalis, capitulo discoideo 20–30-floro floribus centralibus sterilibus, involucri tubuloso-campanulati bracteis quinque uniseriatis basi liberis sed marginibus intertextis oblongis acutis vel obtusis apiculatis versus apicem leviter carinatis alternis late membranaceo-marginatis ciliatis, corolla 5-dentata tubo gracili fauce ampliata glabra alba, stylis in omnibus floribus bifidis, achæniis fertilibus subteretibus validis dense tomentosis, pappi setis copiosis.

Habitat.—South Africa: Transvaal, near Lydemburg, *Atherstone*; Makwongwa Mountains, near Barberton, 4500 feet, April, *Galpin*, 902; no locality, *Mrs. Saunders* (*Wood*, 3915).

Folia 1½–3 poll. longa, 1–1½ poll. lata. *Pedunculi* ½–1¾ poll. longi. *Capitulum* ½–¾ poll. diam. *Involucri* bracteæ ½–¾ poll. longæ, 2–4 lin. latæ. *Corolla* 7 lin. longa. *Achænia* ⅓ poll. longa, ⅛ poll. crassa.

A very distinct species, remarkable for the strictly distichous arrangement of the leaves, and the zigzag wing formed by their decurrent bases on opposite sides of the stem. The flowers are stated by

Mr. Galpin to be creamy-white. The affinity of *O. disticha* is with the species of a shrubby habit, more especially with *O. coriifolia*, Sond., and those plants which have been generically separated from *Othonna* under the names of *Lopholæna* and *Othonnopsis*. A careful examination leads us to the conclusion that *Othonnopsis* should be reduced to *Othonna*.

116. **Lactuca nana**, *Baker* [Compositæ-Cichoriaceæ]; perennis, radice crassa fusiformi, foliis radicalibus evanescentibus, caulibus brevissimis glabris dense cæspitosis, bracteis parvis ovatis, capitulis dense corymbosis, involucro oblongo bracteis interioribus 8 linearibus dorso glabris exterioribus ovato-lanceolatis, achenio castaneo indistincte rostrato, pappo albo molli copioso.

Habitat.—Interior of Western Lagos, *Dr. Rowland.* Namuli Makua country, East Tropical Africa, *J. T. Last.*

Caulis 2-3-pollicaris. *Involucrum* semipollicare. *Achænia* 2 lin. longa. *Pappus* 4 lin. longus.

This curious, dwarf, densely-tufted species belongs to the section *Brachyrhampus*, and is allied to *L. goræensis*, Schultz-Bip.

117. **Episcia (Centrosolenia) densa**, *Wright* [Gesneraceæ-Cyrtandreæ]; herba robusta, caule brevi purpureo minute pubescenti, foliis oblongis acuminatis basi rotundatis vel subacutis supra leviter pilosis subtus glabris purpureis, marginibus serrulatis, petiolis laminis dimidio brevioribus purpureis supra planis subtus convexis, floribus pluribus in axillis foliorum congestis, calyce segmentis 5 postico libero reliquis conjunctis extus purpureis intus viridibus, corolla cylindrica basi contracta et in calcarem brevem producta extus dilute lutea intus purpureo suffusa, staminibus 4 prope basin corollæ insertis, antherarum apicibus cohærentibus, disco glandula postica magna cæteris omnino deficientibus, ovario supero subgloboso apice piloso, stylo filiformi, stigmate capitato.

Habitat.—British Guiana: River Masouria, *Jenman*, 2414.

Petiolus 4 poll. longus, *lamina* 8 poll. longa, 4 poll. lata. *Calyx* 10 lin. longus. *Corolla* 1½ poll. longa.

Allied to *Episcia erythropus*, Hook. fil., Bot. Mag. t. 6219, but differing in the corolla having shorter lobes and a longer spur. This plant has been in cultivation at Kew.

118. **Calathea cyclophora**, *Baker* [Scitamineæ-Maranteæ]; acaulis, foliis longe petiolatis oblongis cuspidatis glabris utrinque pallide viridibus concoloribus basi rotundatis, pedunculo brevi radicali, floribus geminis niveis in spicam oblongam aggregatis, bracteis arcte imbricatis glabris orbicularibus chartaceis pallide brunneis apice cuspidatis squarrosis, corollæ tubo elongato cernuo lobis lineari-oblongis, staminodiis obovatis corollæ lobis æquilongis.

Habitat.—British Guiana: Essequibo, *Appun*, 252. Flowered at Kew Oct. 1894; received from the Demerara Botanic Garden in 1890.

Foliorum lamina 8–10 poll. longa, 4–4½ poll. lata; petiolus laminæ æquilongus. *Scapus* 2–4-pollicaris. *Spica* 1½–2-pollicaris, bracteis 9–12-lin. longis. *Corollæ* tubus 12–15 lin. longus; lobi 4–5 lin. longi.

Allied to *C. æmula*, Körnicke (*Fl. Bras.* iii. pars. 3, t. 21), and the well-known *C. zebrina*, Lindl., but the flower is white and the leaves not at all variegated, so that it is not a striking species from a horticultural point of view.

119. Calathea Gardneri, *Baker* [Scitamineæ]; acaulis, scapo radicali elongato gracili glabro, foliis longe petiolatis oblongis acutis chartaceis glabris basi cuneatis, floribus in spicam densam oblongam aggregatis, bracteis glabris chartaceis arcte imbricatis inferioribus orbicularibus obtusis fertilibus superioribus sterilibus oblongis acutis, flore "cæruleo," corollæ tubo bracteæ fertili æquilongo, staminodiis exterioribus parvis obovatis corollæ lobis æquilongis.

Habitat.—Brazil: province of Ceara, in woods near Crato, *Gardner*, 2031.

Scapus 8-12-pollicaris. *Lamina* 6–10 poll. longa, medio 2½–3 poll. lata. *Spica* 1½–2 poll. longa, bracteis floriferis 8–9 lin., superioribus vacuis 12–14 lin. longis. *Staminodia* exteriora 3–4 lin. longa.

This belongs to the small section *Comosæ*, in which the spike is crowned by a coma of sterile bracts, which are different from the fertile ones in shape and texture. It is very near to the plant figured as *C. capitata* by Peterssen in "Flora Brasiliensis," vol. iii. part 3, page 120, tab. 33, but I do not think this is identical with the Peruvian *C. capitata*, Lindl.

120. Aglaonema angustifolia, *N. E. Brown* [Aroideæ]; caule erecto nitidissimo, foliis petiolatis petiolis longe vaginatis basi abrupte dilatatis laminis elongato-lineari-oblongis acuminatis basi cuneato-rotundatis marginibus undulatis costa utrinque prominenti nervis utrinque 4–6 supra impressis viridibus immaculatis, pedunculo quam petiolus breviore terminali pallide virenti, spatha parva ellipsoidea apiculata antice aperta albida, spadice breviter stipitato e spatha brevissime exserto cylindrico obtuso, ovariis subseriatis luteolis, stigmate magno centro depresso, antheris albis.

Habitat.—Straits Settlements: Pangkore, *Curtis*, *Scortechini*.

Caulis 3–3½ lin. crassus. *Foliorum* petioli 1¼–2 poll. longi, laminæ 5–9½ poll. longæ, ½–1 poll. latæ. *Pedunculus* ½–2¼ poll. longus. *Spatha* 1–1½ poll. longa, 5–7 lin. diam. *Spadix* (stipes 2–3 lin. longus inclusus), 10 lin. 1½ poll. longus.

A very distinct species easily recognised by its long narrow leaves. The upper part of the stem is of a silvery grey, very smooth, and shining as if polished when alive. The above description was made from a living plant sent to Kew by Mr. C. Curtis, Assistant Superintendent, Garden and Forest Department, Penang.

CCCCXXXVII.—MISCELLANEOUS NOTES.

Visitors during the year 1894.—The number of persons who visited the Royal Gardens during the year 1894 was 1,377,588. This shows a falling off as compared with 1893 of, in round numbers, 450,000, which is probably to be attributed to the marked difference in the summer of the two years. The total does not, however, differ appreciably from that for 1891, and does not depart very widely from 1,416,887, the average for the preceding ten-year period.

The actual annual attendance of visitors at Kew now oscillates about a figure which probably nearly approaches a million and a half. And at this it is perhaps likely to remain for some time with the existing means of access from London.

The detailed numbers for 1894 are given below :—

Month.	Numbers.	Month.	Numbers.
January - - -	18,184	Brought forward -	785,009
February - - -	32,992	July - - -	185,427
March - -	218,514	August - - -	211,192
April - - - -	139,741	September - -	101,550
May - - -	229,161	October - - -	42,228
June - - - -	146,417	November - -	31,738
		December - - -	20,444
Carried forward -	785,009		
		Total - -	1,377,588

Curtis's Botanical Magazine.—This illustrated work, which has reached the 107th year of its existence and its one hundred and twentieth volume, is, and long has been, a permanent record of a selection of the most ornamental and useful plants flowering at Kew during the year. Fifty out of 60 of the figures published in last year's volume were drawn from plants that flowered at Kew.

Hooker's "Icones Plantarum."—The second part of the fourth volume of the current series of this publication contains figures of a number of new tropical African *Apocynaceæ*; a new "Jaborandi," *Pilocarpus microphyllus*; *Stenomeris borneensis*, the third species of this somewhat anomalous genus; *Euphorbia Abbottii*, a distinct species from Aldabra Island, in the Indian Ocean; *Rhynchocalyx*, a new genus of *Lythrarieæ*, and various other interesting plants.

Arenga Engleri, *Becc.*—This palm, described by Signor Beccari in *Malesia*, iii. p. 184, was discovered by the late Mr. R. Oldham in Formosa (Nos. 626 and 627) where it has since been collected by Mr. C. Ford, F.L.S. (No. 26) and Dr. A. Henry (Nos. 798 and 798A.). According to Dr. A. Henry it grows in shady spots and reaches a height of about 5 feet. The fronds bear numerous pinnæ, the longest of which are about 16 in. long and 1 in. broad, and much constricted at the base and irregularly toothed at the apex. The axis of the frond is semiterete near the base and triangular at the apex, and more or less covered with brownish furfuraceous scales. The much-branched spadices are borne amongst the leaves and are about a foot long. The fruit is subglobose, about 8 lines in diameter and 3-celled, bearing in each cell a single seed, convex on the dorsal side, with an obtuse angle on the ventral side and having on its spermoderm numerous reticulations; the minute embryo is situated in the centre of the dorsal side. Mr. C. Ford, who has introduced the plant into the Hong Kong Botanic Gardens, and has recently sent seeds to Kew, states that the flowers have a most delightful perfume, which fills the air for a very great distance around it, the whole country about Keelung being scented with it in the month of June.

Botany of the Pilcomayo Expedition.—After considerable delay, an account has appeared (*Transactions and Proceedings of the Botanical Society of Edinburgh*, xx. 1894, pp. 44–78) of the plants collected by Mr. J. Graham Kerr, naturalist to the unfortunate Argentine Expedition of 1890–91, to the Rio Pilcomayo, in the Grand Chaco of South America. The collection was presented to Kew (*Kew Bulletin*, 1891, p. 276), and Mr. Graham Kerr has supplemented the enumeration and descriptions supplied to him by notes on the localities, uses, native names, and other particulars. Taken altogether it is a valuable contribution to our knowledge of an interesting flora.

Scientific Reports of Mr. Conway's Karakoram Expedition.—These, together with maps on a large scale showing the route, have been issued in a separate volume. The botany consists of a systematic list of the plants, with the localities and altitudes at which they were collected. As already reported (*Kew Bulletin*, 1893, p. 145) the collection of dried plants was presented by Mr. Conway to Kew. Only two were previously undescribed; but the list is valuable, first as giving a good idea of the flora of a glacial region, and secondly for the careful manner in which the plants have been localised.

Koorders' Malayan Plants.—Mr. S. H. Koorders, associated with Dr. Th. Valeton, has lately published an important contribution to our knowledge of the trees of Java, based on extensive investigations and collections made on the spot. The main part of the work is in the Dutch language, but it also contains Latin descriptions of all the species. It is issued under the Latin title of *Additamenta ad Cognitionem Floræ Javanicæ*. Pars 1. Arbores. A good many new species are described, and through the kindness of Dr. M. Treub, Director of the Buitenzorg Botanic Garden, Kew has received a set of Koorders' plants, including authentically named specimens of many of these novelties.

Fiji.—A collection of plants from Fiji has been received from Mr. D. Yeoward, Curator of the Botanical Station there. Besides native plants, the collection includes many specimens of introduced plants. A species of *Vavæa* has proved to be new, and a description of it has been drawn up for the *Bulletin*. It forms a large tree, with leaves nearly a foot long and clusters of numerous white flowers. One plant, called by the natives *Lniu Lutu ni Vicau*, is an apparently undescribed species of *Macaranga*, remarkable for its very obliquely peltate lanceolate leaves nearly 2 feet long.